REMARKS

The Office Action dated July 24, 2008 and Advisory Action dated October 20, 2008 have been received and carefully studied.

A Request for Continued Examination (RCE) is filed herewith.

The Examiner maintains the rejection of claims 1, 3-5, 7-10, 13 and 15 under 35 U.S.C. §103(a) as being unpatentable over White et al., U.S. Patent No. 6,539,968, in view of Vavra et al., U.S. Patent No. 5,303,731, and Inayama et al., U.S. Patent No. 6,584,999. It is noted that in the Advisory Action, the Examiner provided no reasons as to why Applicant's previous arguments were found to be non-persuasive.

By the accompanying amendment, claim 1 has been amended to recite, *inter alia,* that the fluid flow control apparatus includes means for measuring pressure drop; a controller in communication with the pressure drop measuring means and with the pneumatic proportional control valve for controlling the flow of fluid through the proportional fluid control valve in response to the measured pressure drop, and to recite that the apparatus is configured to interchangeably contain one of a plurality of frictional flow elements, each comprising a helical coil having a unique length or diameter relative to any other of said plurality of frictional flow elements. Claim 9 has been amended to recite, *inter alia,* determining the flow characteristics of the fluid; providing an interchangeable frictional flow element in fluid communication with the first fluid outlet, the frictional flow element comprising a helical coil having a length and diameter chosen based upon the flow characteristics to create a pressure

drop across the element. Support for the amendments can be found, for example, on pages 30-31 of the published PCT application.

Vavra et al., cited for its disclosure of a helical coil, does not disclose or suggest configuring the apparatus to accommodate different diameter or length-sized coils depending upon the flow or fluid characteristics as taught by the present invention. With particular reference to method claim 9, the combination of White et al., Vavra et al. and Inayama et al. do not suggest the steps of determining the flow characteristics of the fluid and providing an interchangeable frictional flow element comprising a helical coil having a length and diameter chosen based upon the determined flow characteristics to create a pressure drop across the element.

Applicants also again respectfully submit that the skilled artisan would not modify the White et al. fluid flow control apparatus with the pneumatic proportional control valve of Inayama et al. for the following reasons, which have not been specifically addressed by the Examiner and are thus being reiterated herein.

The valve 40 of White et al. is electrically actuated (see column 4, lines 61-64). An actuator 43, such as a solenoid, is electrically actuated to operate closure member 41, which throttles flow of fluid from internal passage 42 to internal passage 44.

Inayama et al. disclose a fluid pressure controller for supplying fluid pressurized at a regulated pressure to a fluid pressure apparatus such as a cylinder. The "pneumatic proportional control valve (76, 78)" relied upon by the Examiner

is an air supply solenoid valve 76 and a spaced apart air discharge solenoid valve 78. As can be seen in Figure 2, pressurized fluid is supplied from a source to the air supply solenoid valve 76 via fluid supply port 24 in fluid communication with passage 80. Importantly, the same fluid from the source is also fed the fluid supply port 24 via a fluid communication passage 30 to the regulator port 28, which ultimately results in the discharge of the pressurized fluid via the discharge port 38 when the valves are actuated accordingly. That is, fluid from the fluid supply source that is fed to the air supply solenoid valves 76, 78 is also the same source of pressurized fluid being regulated and fed to the point of use.

The air supply solenoid valves are operative to control the pilot pressure of a pilot chamber 58, which dictates the position of valve plug 34a, allowing pressurized fluid to be discharged from discharge port 38.

Applicants fail to see how the skilled artisan would be motivated to substitute the air supply solenoids 76, 78 of Inayama et al. for the electrically actuated solenoid of White et al. The White et al. fluid mass flow controller controls the flow of toxic or reactive fluid (e.g., tungsten hexafluoride, chlorine, sulfur hexafluoride) in gaseous form for use in semiconductor fabrication. Certainly the skilled artisan would not choose to use that same toxic fluid as the hydraulic fluid supply to an air supply valve as taught by Inayama et al. in order to operate closure member 41.

The Examiner states that it would have been obvious to one of ordinary skill in the art to have utilized the pneumatic

proportional control valve taught by Inayama et al. in place of the solenoid type proportional control valve of White et al. "for the purpose of providing a self-contained flow control device." However, the White et al. controller is already a self-contained flow control device, as can be seen in Figure 1 thereof.

Furthermore, to be operable, the modification of White et al. with the "pneumatic proportional control valve (76, 78) of Inayama et al., if even possible would require substantial additional structure. That is, the valves 76, 78 of Inayama et al. function to pressurize the pilot chamber 58, which deflects diaphragm 54, which in turn ultimately displaces the valve plug 34a, regulating the pressurized fluid from the supply port 24 to the regulator port 28. No such pilot chamber, diaphragm or valve plug is present in White et al. No motivation exists for complicating the White et al. electrically operated solenoid valve 43 with the intricate system of Inayama et al. to actuate closure member 41.

The Examiner also rejects claim 6 under 35 U.S.C. §103(a) as being unpatentable over White et al. in view of Vavra et al. and Inayama et al., and further in view of McLoughlin et al., U.S. Patent No. 6,348,098, and claim 15 as being unpatentable over White et al. in view of Vavra et al. and Inayama et al., and further in view Balazy, U.S. Patent No. 6,152,162. McLoughlin et al. is cited for its disclosure of a suckback valve in pneumatic communication with a pneumatic proportional control valve. Balazy et al. is cited for its disclosure of means for regulating the fluid pressure of the fluid entering the first fluid inlet.

Claims 6 and 15 are believed to be allowable by virtue of their dependence, for the reasons discussed above.

The Examiner's allowance of claims 11, 12, 14 and 53 is noted with appreciation.

Reconsideration and allowance of all pending claims are respectfully requested in view of the foregoing.

Respectfully submitted,

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